



Marked up Version of SEQUENCE LISTING section



# SEQUENCE LISTING

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REED, JOHN C.  
DEVERAUX, QUINN L.  
MAEDA, SUSUMU

<120> INHIBITOR OF APOPTOSIS PROTEINS AND NUCLEIC ACIDS AND  
METHODS FOR MAKING AND USING THEM

<130> 087102/027 2537

<140> 10/041,859

<141> 2002-01-07

<150> 60/260,478

<151> 2001-01-08

<160> 27

<170> PatentIn Ver. 3.3

<210> 1

<211> 3773

<212> DNA

<213> Bombyx mori

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<221> CDS

<222> (2733) .. (3770)

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gca aaa atg cga cct ttc att ggt ccg ctc atg tta tcc tcg tgt gag	2849							
Ala Lys Met Arg Pro Phe Ile Gly Pro Leu Met Leu Ser Ser Cys Glu								
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Thr Asp Asn His Asp Thr Phe Asn Phe Leu Pro Asp Met Pro Asp Met								
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Arg Arg Glu Glu Glu Arg Leu Lys Thr Phe Asp Gln Trp Pro Val Thr								
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Phe Leu Thr Pro Glu Gln Leu Ala Arg Asn Gly Phe Tyr Tyr Leu Gly								
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Arg Gly Asp Glu Val Cys Cys Ala Phe Cys Lys Val Glu Ile Met Arg								
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tgg gtc gaa ggc gac gat cct gcc gcc gat cat cgg aga tgg gcg ccc	3137							
Trp Val Glu Gly Asp Asp Pro Ala Ala Asp His Arg Arg Trp Ala Pro								
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cag tgt ccc ttt gta cga aaa caa atg tat gcc aac gct ggg gga gag	3185							
Gln Cys Pro Phe Val Arg Lys Gln Met Tyr Ala Asn Ala Gly Gly Glu								
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Ala Thr Ala Val Gly Arg Asp Glu Cys Gly Ala Ser Ala Ala Thr Gln								
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cct ccc cgc atg ccc ggc ccc gtg cac gcg cgg tac tcc acc gag gcc	3281							
Pro Pro Arg Met Pro Gly Pro Val His Ala Arg Tyr Ser Thr Glu Ala								
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Ala Arg Leu Ala Thr Phe Lys Asp Trp Pro Arg Arg Met Arg Gln Lys								
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ccc gag gaa ctg gca gag gcc gga ttc ttc tat aca ggc caa ggt gac	3377							
Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly Gln Gly Asp								
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aaa acg aaa tgc ttc tat tgc gac gga ggg cta aaa gat tgg gaa agc	3425							
Lys Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu Lys Asp Trp Glu Ser								
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gat gac gtt ccg tgg gaa cag cac gcc aga tgg ttc gac cgc tgc gcg	3473							

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Tyr	Val	Gln	Leu	Val	Lys	Gly	Arg	Asp	Tyr	Ile	Gln	Lys	Val	Lys	Ser		
		250					255					260					
gag	gcc	act	gcg	ata	tct	gct	agc	gaa	gaa	gaa	cag	gcc	gcc	acc	aat	3569	
Glu	Ala	Thr	Ala	Ile	Ser	Ala	Ser	Glu	Glu	Glu	Gln	Ala	Ala	Thr	Asn		
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gat	tcg	act	aag	aac	gtc	gcc	caa	gag	ggc	gag	aaa	cat	ttg	gat	gac	3617	
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gtg	ccg	tgc	ggc	cac	gtg	gtg	gcg	tgc	gcc	aag	tgc	gcg	ctg	tcg	acg	3713	
Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Ala	Lys	Cys	Ala	Leu	Ser	Thr		
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gac	aag	tgc	ccg	atg	tgt	cgc	agg	acg	ttc	acg	aat	gcg	gtg	cgg	ctc	3761	
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 <213> Bombyx mori

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Leu	Met	Leu	Ser	Ser	Cys	Glu	Ser	Ser	Thr	Thr	Ser	Thr	Leu	Pro	Ser		
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Pro	Ser	Ser	Ser	Ala	Asp	Lys	Thr	Asp	Asn	His	Asp	Thr	Phe	Asn	Phe		
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Leu	Pro	Asp	Met	Pro	Asp	Met	Arg	Arg	Glu	Glu	Glu	Arg	Leu	Lys	Thr		
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Phe	Asp	Gln	Trp	Pro	Val	Thr	Phe	Leu	Thr	Pro	Glu	Gln	Leu	Ala	Arg		
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Asn	Gly	Phe	Tyr	Tyr	Leu	Gly	Arg	Gly	Asp	Glu	Val	Cys	Cys	Ala	Phe		
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Cys	Lys	Val	Glu	Ile	Met	Arg	Trp	Val	Glu	Gly	Asp	Asp	Pro	Ala	Ala		
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Asp	His	Arg	Arg	Trp	Ala	Pro	Gln	Cys	Pro	Phe	Val	Arg	Lys	Gln	Met
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Tyr	Ala	Asn	Ala	Gly	Gly	Glu	Ala	Thr	Ala	Val	Gly	Arg	Asp	Glu	Cys
145				150						155					160
Gly	Ala	Ser	Ala	Ala	Thr	Gln	Pro	Pro	Arg	Met	Pro	Gly	Pro	Val	His
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Ala	Arg	Tyr	Ser	Thr	Glu	Ala	Ala	Arg	Leu	Ala	Thr	Phe	Lys	Asp	Trp
			180					185					190		
Pro	Arg	Arg	Met	Arg	Gln	Lys	Pro	Glu	Glu	Leu	Ala	Glu	Ala	Gly	Phe
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Gly	Leu	Lys	Asp	Trp	Glu	Ser	Asp	Asp	Val	Pro	Trp	Glu	Gln	His	Ala
225					230					235					240
Arg	Trp	Phe	Asp	Arg	Cys	Ala	Tyr	Val	Gln	Leu	Val	Lys	Gly	Arg	Asp
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Tyr	Ile	Gln	Lys	Val	Lys	Ser	Glu	Ala	Thr	Ala	Ile	Ser	Ala	Ser	Glu
			260					265					270		
Glu	Glu	Gln	Ala	Ala	Thr	Asn	Asp	Ser	Thr	Lys	Asn	Val	Ala	Gln	Glu
		275					280					285			
Gly	Glu	Lys	His	Leu	Asp	Asp	Ser	Lys	Ile	Cys	Lys	Ile	Cys	Tyr	Ser
290						295					300				
Glu	Glu	Arg	Asn	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys
305					310					315					320
Ala	Lys	Cys	Ala	Leu	Ser	Thr	Asp	Lys	Cys	Pro	Met	Cys	Arg	Arg	Thr
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<223> a, c, g or t

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<210> 4  
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<213> Artificial Sequence

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<223> a, c, g or t

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<210> 6  
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<223> Description of Artificial Sequence: Synthetic  
conserved motif

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<223> Variable residue

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<211> 172  
<212> PRT  
<213> Bombyx mori

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Asp Glu Val Cys Cys Ala Phe Cys Lys Val Glu Ile Met Arg Trp Val  
35 40 45  
Glu Gly Asp Asp Pro Ala Ala Asp His Arg Arg Trp Ala Pro Gln Cys  
50 55 60  
Pro Phe Val Glu Ala Ala Arg Leu Ala Thr Phe Lys Asp Trp Pro Arg



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Arg	Met	Arg	Gln	Lys	Pro	Glu	Glu	Leu	Ala	Glu	Ala	Gly	Phe	Phe	Tyr
				85					90					95	
Thr	Gly	Gln	Gly	Asp	Lys	Thr	Lys	Cys	Phe	Tyr	Cys	Asp	Gly	Gly	Leu
			100					105					110		
Lys	Asp	Trp	Glu	Ser	Asp	Asp	Val	Pro	Trp	Glu	Gln	His	Ala	Arg	Trp
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Phe	Asp	Arg	Cys	Ala	Tyr	Val	Leu	Cys	Lys	Ile	Cys	Tyr	Ser	Glu	Glu
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Arg	Asn	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Ala	Lys
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Cys	Ala	Leu	Ser	Thr	Asp	Lys	Cys	Pro	Met	Cys	Arg				
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 <213> Spodoptera frugiperda

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35 40 45
Glu Gly Asp Asp Pro Ala Lys Asp His Gln Arg Trp Ala Pro Gln Cys
50 55 60
Pro Phe Val Glu Ala Ala Arg Leu Arg Ser Phe Lys Asp Trp Pro Arg
65 70 75 80
Cys Met Arg Gln Lys Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr
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Thr Gly Gln Gly Asp Lys Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu
100 105 110
Lys Asp Trp Glu Asn His Asp Val Pro Trp Glu Gln His Ala Arg Trp
115 120 125
Phe Asp Arg Cys Ala Tyr Val Leu Cys Lys Ile Cys Tyr Ala Glu Glu
130 135 140
Arg Asn Val Cys Phe Val Pro Cys Gly His Val Val Ala Cys Ala Lys
145 150 155 160
Cys Ala Leu Ala Ala Asp Lys Cys Pro Met Cys Arg
165 170

<210> 10  
<211> 172  
<212> PRT  
<213> Trichoplusia ni

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Asp Glu Val Arg Cys Ala Phe Cys Lys Val Glu Ile Met Arg Trp Val  
35 40 45  
Glu Gly Asp Asp Pro Ala Lys Asp His Gln Arg Trp Ala Pro Gln Cys  
50 55 60  
Pro Phe Val Glu Ala Ala Arg Leu Arg Ser Phe Lys Asp Trp Pro Arg  
65 70 75 80  
Cys Met Arg Gln Lys Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr  
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Thr Gly Gln Gly Asp Lys Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu  
100 105 110  
Lys Asp Trp Glu Asn Asp Asp Val Pro Trp Glu Gln His Ala Arg Trp  
115 120 125  
Phe Asp Arg Cys Ala Tyr Val Leu Cys Lys Ile Cys Phe Ala Glu Glu  
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Arg Asn Val Cys Phe Val Pro Cys Gly His Val Val Ala Cys Ala Lys  
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Cys Ala Leu Ala Ala Asp Lys Cys Pro Met Cys Arg  
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<211> 172  
<212> PRT  
<213> Cydia pomonella granulovirus

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35 40 45  
Glu Gly Glu Asp Pro Ala Ala Asp His Lys Lys Trp Ala Pro Gln Cys  
50 55 60  
Pro Phe Val Glu Ala Ala Arg Val Lys Ser Phe His Asn Trp Pro Arg  
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Thr	Gly	Tyr	Gly	Asp	Asn	Thr	Lys	Cys	Phe	Tyr	Cys	Asp	Gly	Gly	Leu	
			100					105					110			
Lys	Asp	Trp	Glu	Pro	Glu	Asp	Val	Pro	Trp	Glu	Gln	His	Val	Arg	Trp	
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Phe	Asp	Arg	Cys	Ala	Tyr	Val	Leu	Cys	Lys	Ile	Cys	Tyr	Val	Glu	Glu	
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Cys	Ile	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Ala	Lys	
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Cys	Ala	Leu	Ser	Val	Asp	Lys	Cys	Pro	Met	Cys	Arg					
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 <213> Orgyia pseudotsugata

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Asp	Glu	Val	Arg	Cys	Ala	Phe	Cys	Lys	Val	Glu	Ile	Thr	Asn	Trp	Val	
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Arg	Gly	Asp	Asp	Pro	Glu	Thr	Asp	His	Lys	Arg	Trp	Ala	Pro	Gln	Cys	
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Gly	Leu	Lys	Gln	Arg	Pro	Glu	Glu	Leu	Ala	Glu	Ala	Gly	Phe	Phe	Tyr	
			85						90					95		
Thr	Gly	Gln	Gly	Asp	Lys	Thr	Arg	Cys	Phe	Cys	Cys	Asp	Gly	Gly	Leu	
		100						105					110			
Lys	Asp	Trp	Glu	Pro	Asp	Asp	Ala	Pro	Trp	Gln	Gln	His	Ala	Arg	Trp	
		115					120					125				
Tyr	Asp	Arg	Cys	Glu	Tyr	Val	Leu	Cys	Lys	Ile	Cys	Leu	Gly	Ala	Glu	
	130					135					140					
Lys	Thr	Val	Cys	Phe	Val	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Gly	Lys	
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Cys	Ala	Ala	Gly	Val	Thr	Thr	Cys	Pro	Val	Cys	Arg					
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<210> 13  
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<212> PRT

<213> *Drosophila melanogaster*

<400> 13

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			20					25					30		
Asp	Lys	Val	Lys	Cys	Phe	Phe	Cys	Gly	Val	Glu	Ile	Gly	Cys	Trp	Glu
		35					40					45			
Gln	Glu	Asp	Gln	Pro	Val	Pro	Glu	His	Gln	Arg	Trp	Ser	Pro	Asn	Cys
	50					55					60				
Pro	Leu	Leu	Glu	Thr	Ala	Arg	Leu	Arg	Thr	Phe	Glu	Ala	Trp	Pro	Arg
65					70					75					80
Asn	Leu	Lys	Gln	Lys	Pro	His	Gln	Leu	Ala	Glu	Ala	Gly	Phe	Phe	Tyr
				85					90					95	
Thr	Gly	Val	Gly	Asp	Arg	Val	Arg	Cys	Phe	Ser	Cys	Gly	Gly	Gly	Leu
			100					105					110		
Met	Asp	Trp	Asn	Asp	Asn	Asp	Glu	Pro	Trp	Glu	Gln	His	Ala	Leu	Trp
		115					120					125			
Leu	Ser	Gln	Cys	Arg	Phe	Val	Leu	Cys	Lys	Ile	Cys	Tyr	Gly	Ala	Glu
	130					135					140				
Tyr	Asn	Thr	Ala	Phe	Leu	Pro	Cys	Gly	His	Val	Val	Ala	Cys	Ala	Lys
145					150					155					160
Cys	Ala	Ser	Ser	Val	Thr	Lys	Cys	Pro	Leu	Cys	Arg				
				165					170						

<210> 14

<211> 68

<212> PRT

<213> *Bombyx mori*

<400> 14

Glu	Ala	Ala	Arg	Leu	Ala	Thr	Phe	Lys	Asp	Trp	Pro	Arg	Arg	Met	Arg
1				5					10					15	
Gln	Lys	Pro	Glu	Glu	Leu	Ala	Glu	Ala	Gly	Phe	Phe	Tyr	Thr	Gly	Gln
			20					25					30		
Gly	Asp	Lys	Thr	Lys	Cys	Phe	Tyr	Cys	Asp	Gly	Gly	Leu	Lys	Asp	Trp
		35					40					45			
Glu	Ser	Asp	Asp	Val	Pro	Trp	Glu	Gln	His	Ala	Arg	Trp	Phe	Asp	Arg
	50					55					60				
Cys	Ala	Tyr	Val												
65															

<210> 15

<211> 68  
<212> PRT  
<213> Spodoptera frugiperda

<400> 15  
Glu Ala Ala Arg Leu Arg Ser Phe Lys Asp Trp Pro Arg Cys Met Arg  
1 5 10 15  
Gln Lys Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly Gln  
20 25 30  
Gly Asp Lys Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu Lys Asp Trp  
35 40 45  
Glu Asn His Asp Val Pro Trp Glu Gln His Ala Arg Trp Phe Asp Arg  
50 55 60  
Cys Ala Tyr Val  
65

<210> 16  
<211> 68  
<212> PRT  
<213> Trichoplusia ni

<400> 16  
Glu Ala Ala Arg Leu Arg Ser Phe Lys Asp Trp Pro Arg Cys Met Arg  
1 5 10 15  
Gln Lys Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly Gln  
20 25 30  
Gly Asp Lys Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu Lys Asp Trp  
35 40 45  
Glu Asn Asp Asp Val Pro Trp Glu Gln His Ala Arg Trp Phe Asp Arg  
50 55 60  
Cys Ala Tyr Val  
65

<210> 17  
<211> 68  
<212> PRT  
<213> Cydia pomonella granulovirus

<400> 17  
Glu Ala Ala Arg Val Lys Ser Phe His Asn Trp Pro Arg Cys Met Lys  
1 5 10 15  
Gln Arg Pro Glu Gln Met Ala Asp Ala Gly Phe Phe Tyr Thr Gly Tyr  
20 25 30  
Gly Asp Asn Thr Lys Cys Phe Tyr Cys Asp Gly Gly Leu Lys Asp Trp  
35 40 45  
Glu Pro Glu Asp Val Pro Trp Glu Gln His Val Arg Trp Phe Asp Arg  
50 55 60

Cys Ala Tyr Val  
65

<210> 18  
<211> 68  
<212> PRT  
<213> *Orgyia pseudotsugata*

<400> 18  
Glu Ala Ala Arg Leu Arg Thr Phe Ala Glu Trp Pro Arg Gly Leu Lys  
1 5 10 15  
Gln Arg Pro Glu Glu Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly Gln  
20 25 30  
Gly Asp Lys Thr Arg Cys Phe Cys Cys Asp Gly Gly Leu Lys Asp Trp  
35 40 45  
Glu Pro Asp Asp Ala Pro Trp Gln Gln His Ala Arg Trp Tyr Asp Arg  
50 55 60

Cys Glu Tyr Val  
65

<210> 19  
<211> 68  
<212> PRT  
<213> *Drosophila melanogaster*

<400> 19  
Glu Thr Ala Arg Leu Arg Thr Phe Glu Ala Trp Pro Arg Asn Leu Lys  
1 5 10 15  
Gln Lys Pro His Gln Leu Ala Glu Ala Gly Phe Phe Tyr Thr Gly Val  
20 25 30  
Gly Asp Arg Val Arg Cys Phe Ser Cys Gly Gly Gly Leu Met Asp Trp  
35 40 45  
Asn Asp Asn Asp Glu Pro Trp Glu Gln His Ala Leu Trp Leu Ser Gln  
50 55 60

Cys Arg Phe Val  
65

<210> 20  
<211> 37  
<212> PRT  
<213> *Bombyx mori*

<400> 20  
Leu Cys Lys Ile Cys Tyr Ser Glu Glu Arg Asn Val Cys Phe Val Pro  
1 5 10 15  
Cys Gly His Val Val Ala Cys Ala Lys Cys Ala Leu Ser Thr Asp Lys  
20 25 30

Cys Pro Met Cys Arg

<210> 21  
 <211> 37  
 <212> PRT  
 <213> *Spodoptera frugiperda*

<400> 21  
 Leu Cys Lys Ile Cys Tyr Ala Glu Glu Arg Asn Val Cys Phe Val Pro  
   1                  5                  10                  15  
 Cys Gly His Val Val Ala Cys Ala Lys Cys Ala Leu Ala Ala Asp Lys  
                   20                  25                  30  
 Cys Pro Met Cys Arg  
                   35

<210> 22  
 <211> 37  
 <212> PRT  
 <213> *Trichoplusia ni*

<400> 22  
 Leu Cys Lys Ile Cys Phe Ala Glu Glu Arg Asn Val Cys Phe Val Pro  
   1                  5                  10                  15  
 Cys Gly His Val Val Ala Cys Ala Lys Cys Ala Leu Ala Ala Asp Lys  
                   20                  25                  30  
 Cys Pro Met Cys Arg  
                   35

<210> 23  
 <211> 37  
 <212> PRT  
 <213> *Cydia pomonella granulovirus*

<400> 23  
 Leu Cys Lys Ile Cys Tyr Val Glu Glu Cys Ile Val Cys Phe Val Pro  
   1                  5                  10                  15  
 Cys Gly His Val Val Ala Cys Ala Lys Cys Ala Leu Ser Val Asp Lys  
                   20                  25                  30  
 Cys Pro Met Cys Arg  
                   35

<210> 24  
 <211> 37  
 <212> PRT  
 <213> *Orgyia pseudotsugata*

<400> 24  
 Leu Cys Lys Ile Cys Leu Gly Ala Glu Lys Thr Val Cys Phe Val Pro  
   1                  5                  10                  15  
 Cys Gly His Val Val Ala Cys Gly Lys Cys Ala Ala Gly Val Thr Thr

20

25

30

Cys Pro Val Cys Arg  
35

<210> 25

<211> 37

<212> PRT

<213> Drosophila melanogaster

<400> 25

Leu Cys Lys Ile Cys Tyr Gly Ala Glu Tyr Asn Thr Ala Phe Leu Pro  
1 5 10 15

Cys Gly His Val Val Ala Cys Ala Lys Cys Ala Ser Ser Val Thr Lys  
20 25 30

Cys Pro Leu Cys Arg  
35

<210> 26

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic fluorogenic  
caspase-9 substrate

<400> 26

Leu Glu His Asp  
1

<210> 27

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic fluorogenic  
caspase-3 substrate

<400> 27

Asp Glu Val Asp  
1